

What is Claimed:

- 1 1. A bulk materials pump feeder comprising:
- 2 a housing having:
- 3 (a) an inlet,
- 4 (b) an outlet, and
- 5 (c) an inner wall extending from the inlet to the outlet; and
- 6 a drive rotor having:
- 7 (a) a hub rotatable about a rotation axis,
- 8 (b) a plurality of drive disks having a periphery and
- 9 extending away from the hub toward the inner wall of the
- 10 housing, and
- 11 (c) means disposed on the periphery of the drive disks for
- 12 sealing the area between the periphery of the drive disks and
- 13 the inner wall of the housing;
- 14 the inner wall of the housing, the drive disks, and the hub defining a materials
- 15 transfer duct through which material is transferred from the inlet of the housing to
- 16 the outlet of the housing.
- 1 2. The bulk materials pump feeder according to claim 1 wherein
- 2 the distance between the circumferential edges of the drive disks and the inner wall
- 3 of the housing increases from the inlet of the housing to the outlet of the housing in
- 4 the direction of rotation of the drive rotor.

1 3. The bulk materials pump feeder according to claim 2 further
2 comprising a materials scraper:

3 (a) mounted in the housing,

4 (b) extending into the drive rotor between the drive disks, and

5 (c) having a flexible tip preventing material handled by the bulk
6 materials pump feeder from either flowing backward to a
7 discharge point proximate the outlet of the housing or jamming
8 between the drive disks and the materials scraper.

1 4. The bulk materials pump feeder according to claim 1 further
2 comprising a materials scraper:

3 (a) mounted in the housing,

4 (b) extending into the drive rotor between the drive disks, and

5 (c) having a flexible tip preventing material handled by the bulk
6 materials pump feeder from either flowing backward to a
7 discharge point proximate the outlet of the housing or jamming
8 between the drive disks and the materials scraper.

1 5. The bulk materials pump feeder according to claim 1 wherein
2 the sealing means comprises a low-friction brush seal.

1 6. The bulk materials pump feeder according to claim 5 wherein
2 the brush seal is made of pipe cleaner.

1 7. The bulk materials pump feeder according to claim 1 wherein
2 the sealing means is attached to the drive disks using an adhesive.

1 8. The bulk materials pump feeder according to claim 1 wherein
2 the drive disks have a channel formed in their periphery and the sealing means is
3 disposed in the channel.

1 9. The bulk materials pump feeder according to claim 1 wherein
2 the drive disks have textured interior faces.

1 10. A bulk materials pump feeder comprising:

2 a housing having:

3 (a) an inlet,

4 (b) an outlet, and

5 (c) an inner wall extending from the inlet to the outlet;

6. a drive rotor having:

7 (a) a hub rotatable about a rotation axis, and

8 (b) a plurality of drive disks having a periphery and
9 extending away from the hub toward the inner wall of
10 the housing; and

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11 a materials scraper:
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12 (a) mounted in the housing,

- 13 (b) extending into the drive rotor between the drive disks, and
- 14 (c) having a flexible tip preventing material handled by the bulk
- 15 materials pump feeder from either flowing backward to a
- 16 discharge point proximate the outlet of the housing or jamming
- 17 between the drive disks and the materials scraper;

18 the inner wall of the housing, the drive disks, and the hub defining a materials

19 transfer duct through which material is transferred from the inlet of the housing to

20 the outlet of the housing.

1 11. The bulk materials pump feeder according to claim 10 wherein

2 the distance between the circumferential edges of the drive disks and the inner wall

3 of the housing increases from the inlet of the housing to the outlet of the housing in

4 the direction of rotation of the drive rotor.

1 12. The bulk materials pump feeder according to claim 10 wherein

2 the housing further has a recess in the inner wall downstream from the outlet of the

3 housing and upstream from the inlet of the housing relative to the direction of

4 rotation of the drive rotor and the materials scraper is mounted in the recess.

1 13. The bulk materials pump feeder according to claim 10 wherein

2 the materials scraper also has a plurality of scraping tips.

1 14. The bulk materials pump feeder according to claim 10 wherein

2 the materials scraper also has a continuous scraping surface.

1 15. The bulk materials pump feeder according to claim 10 wherein

2 the hub has a textured surface.

1 16. The bulk materials pump feeder according to claim 10 wherein

2 the drive disks have textured interior faces.

1 17. A bulk materials pump feeder comprising:

2 a housing having:

3 (a) an inlet,

4 (b) an outlet, and

5 (c) an inner wall extending from the inlet to the outlet;

6 a drive rotor having:

7 (a) a hub rotatable about a rotation axis,

8 (b) a plurality of drive disks having a periphery and
9 extending away from the hub toward the inner wall of
10 the housing, with the distance between the
11 circumferential edges of the drive disks and the inner
12 wall of the housing increasing from the inlet of the
13 housing to the outlet of the housing in the direction of
14 rotation of the drive rotor, and

15 (c) a low-friction brush seal disposed on the periphery of
16 the drive disks for sealing the area between the
17 periphery of the drive disks and the inner wall of the
18 housing; and

19 a materials scraper:

20 (a) mounted in the housing,

21 (b) extending into the drive rotor between the drive disks, and

22 (c) having a flexible tip preventing material handled by the bulk
23 materials pump feeder from either flowing backward to a
24 discharge point proximate the outlet of the housing or jamming
25 between the drive disks and the materials scraper;

26 the inner wall of the housing, the drive disks, and the hub defining a materials
27 transfer duct through which material is transferred from the inlet of the housing to
28 the outlet of the housing.

1 18. The bulk materials pump feeder according to claim 17 wherein
2 the drive disks have a channel formed in their periphery and the brush seal is
3 disposed in the channel.

1 19. The bulk materials pump feeder according to claim 17 wherein
2 the hub has a textured surface.

1 20. The bulk materials pump feeder according to claim 17 wherein
2 the drive disks have textured interior faces.